

Attorney Docket No.: K&W 353-WCG
: WW 5594US

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s) : Dr. Sven JACOBSEN, Dr. Christian KUCKERTZ and Dr. Rainer BRANDT

For : FILM LAMINATES AS HIGH BARRIER FILMS AND THEIR USE IN VACUUM INSULATION PANELS

Serial No. : To Be Assigned

Filed : Herewith

Art Unit : To Be Assigned

Examiner : To Be Assigned

September 21, 2001

BOX PATENT APPLICATIONS
Hon. Assistant Commissioner For Patents
Washington, D.C. 20231

PRELIMINARY AMENDMENT

Sir:

In advance of prosecution, the Examiner is respectfully requested to amend the application as follows and consider the following remarks:

IN THE CLAIMS

Please cancel the previous version of the following claims and replace them with the following rewritten version. A marked up copy showing the amendment since the previous version is annexed as separate pages.

Claim 1 (amended). Multi-layer film laminate having a first surface layer and a second surface layer, and comprising at least 4 layers (I) to (IV) arranged directly or indirectly in the following sequence:

- a) layer (I) as the first surface layer comprising at least one layer of film, vapor-coated with aluminium or SiOx or a metal oxide from the main groups 2 or 3 of the periodic table of elements, whereby the vapor-coated surface is adjacent to the following layer,
- b) layer (II) as a gas barrier layer of resin,
- c) layer (III) comprising at least one further layer, vapor-coated with aluminium or SiOx or a metal oxide from the main group 2 or 3 of the periodic table of elements and
- d) layer (IV) as a heat-sealable layer, which is the second surface layer of the film laminate.

Claim 2 (amended). Multi-layer film laminate according to claim 1, wherein said laminated is a resin film laminate.

Claim 3 (amended). Multi-layer film laminate according to claim 1, wherein the gas barrier layer (II) is a polyvinylalcohol layer.

Claim 4 (amended). Multi-layer film laminate according to claim 1, wherein the vapor-coated layer (I) or (III), respectively, is based on a thermoplastic resin.

Claim 5 (amended). Multi-layer film laminate according to claim 1, wherein the layer (I) and the layer (III) are based on identical or different resins.

Claim 6 (amended). Multi-layer film laminate according to claim 1, wherein the layer (I) and/or the layer (III) are themselves each made up of at least two layers and the vapor-coated surfaces are adjacent to each other.

Claim 7 (amended). Multi-layer film laminate according to claim 6, wherein the at least two layers (I) are each based on different resins.

Claim 8 (amended). Multi-layer film laminate according to claim 6, wherein the at least two layers (III) are based on identical resins.

Claim 9 (amended). Multi-layer film laminate according to claim 1, wherein the layer (I) and/or (III) are made of a coextrudate of at least two layers, comprising a resin gas barrier layer.

Claim 10 (amended). Multi-layer film laminate according to claim 9, wherein the coextrudate comprises two polyamide layers (a) and a gas barrier layer (b).

Claim 11 (amended). Multi-layer film laminate according to claim 1, wherein the heat-sealable layer (IV) is based on a thermoplastic resin.

Claim 12 (amended). Multi-layer film laminate according to claim 1, wherein the layer(s) (I) and/or the layer(s) (III), respectively, are vapor-coated with the same material.

Claim 13 (amended). Multi-layer film laminate according to claim 12, wherein said material is aluminium.

Claim 14 (amended). Multi-layer film laminate according to claim 1, wherein each vapor-coated layer has a thickness of 30-80nm.

Claim 15 (amended). Vacuum insulation panels with a hermetically sealed wrapping comprising a multi-layer film laminate according to claim 1, whereby layer (I) is the outside surface layer of the wrapping.

Claim 16 (amended). Vacuum insulation panels according to claim 15 further comprising an insulation material based on polyurethane foam or polystyrene foam each with open cells and/or a filler material based on silicium oxide.

Claim 17 (amended). A vacuum insulation panel wrapped with a gas impermeable wrapping according to claim 1, wherein layer (I) is the outside surface of the wrapping.

Please add the following

--Claim 18. The multilayer film laminate of claim 4, wherein said resin is at least one polyester, at least one polyamide, at least one polyolefin or a copolymer thereof.

Claim 19. The multilayer laminate of claim 5, wherein the layer (I) and the layer (III) are based on different resins.

Claim 20. The multilayer film laminate of claim 7, wherein said different resins are polyamide and polyester or propylene and polyester.

Claim 21. The multilayer film laminate of claim 8, wherein said identical resins are polyester resins.

Claim 22. The multilayer film laminate of claim 9, wherein said resin gas barrier layer is an oxygen barrier layer.

Claim 23. The multilayer film laminate of claim 10, wherein said gas barrier layer is a hydrolyzed ethylene vinyl acetate copolymer, and is sandwiched between said polyamide layers.

Claim 24. The multilayer film laminate of claim 11, wherein said thermoplastic resin is selected from the group consisting of LDPE, LLDPE, polypropylene, polybutylene, metallocenic polyethylene, HDPE, ethylene propylene copolymers, ethylene vinyl acetate copolymers or amorous polyester.

Claim 25. The multilayer film laminate of claim 24, wherein said thermoplastic resin is an amorphous polyethylene terephthalate or an ionomer.--

REMARKS

This preliminary amendment is being filed to place the claims in proper form for prosecution before the USPTO.

Favorable action is respectfully solicited.

CONDITIONAL PETITION FOR EXTENSION OF TIME

If any extension of time for this response is required, Applicants request that this be considered a petition therefor. Please charge the required petition fee to Deposit Account No.

14-1263.

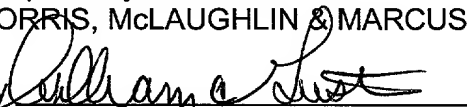
ADDITIONAL FEE

Please charge any insufficiency of fees, or credit any excess, to Deposit Account No.

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Respectfully submitted,
NORRIS, McLAUGHLIN & MARCUS, P.A.

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**MARKED-UP COPY OF AMENDED CLAIM,
SHOWING CHANGES RELATIVE TO PREVIOUS VERSION**

Claim 1 (amended). Multi-layer film laminate having a first surface layer, and a second surface layer, and comprising at least 4 layers (I) to (IV) arranged directly or indirectly in the following sequence:

- a) layer (I) as **[one]** the first surface layer comprising at least one layer **[vapour]** of film,
vapor-coated with aluminium or SiOx or a metal oxide from the main groups 2 or 3 of
the periodic table of elements, whereby the **[vapour]** vapor-coated surface is
adjacent to the following layer,
- b) layer (II) as a gas barrier layer of resin,
- c) layer (III) comprising at least one further layer, **[vapour]** vapor-coated with aluminium
or SiOx or a metal oxide from the main group 2 or 3 of the periodic table of
elements and
- d) layer (IV) as a heat-sealable layer, which is the **[other]** second surface layer of the
film laminate.

Claim 2 (amended). Multi-layer film laminate according to claim 1, **[characterised in that it]** wherein said laminated is a resin film laminate.

Claim 3 (amended). Multi-layer film laminate according to claim 1 **[or 2,**
characterised in that], wherein the gas barrier layer (II) is a polyvinylalcohol layer.

Claim 4 (amended). Multi-layer film laminate according to [one of the claims 1-3, characterised in that] claim 1, wherein the [vapour] vapor-coated layer (I) or (III), respectively, is based on a thermoplastic[al] resin[, particularly at least one polyester, at least one polyamide, at least one polyolefin or a copolymer thereof].

Claim 5 (amended). Multi-layer film laminate according to [one of the claims 1-4, characterised in that] claim 1, wherein the layer (I) and the layer (III) are based on identical or different resins[, preferable on different resins].

Claim 6 (amended). Multi-layer film laminate according to [one of the claims 1-5, characterised in that] claim 1, wherein the layer (I) and/or the layer (III) [exist at least two times] are themselves each made up of at least two layers and [particularly] the [vapour] vapor-coated surfaces are adjacent to each other.

Claim 7 (amended). Multi-layer film laminate according to claim 6, [characterised in that] wherein the at least two layers (I) are each based on different resins[, particularly of polyamide and polyester or of polypropylene and polyester].

Claim 8 (amended). Multi-layer film laminate according to claim 6, [characterised in that] wherein the at least two layers (III) are based on identical resins[, particularly polyester].

Claim 9 (amended). Multi-layer film laminate according to [one of the claims 1-8, characterised in that] claim 1, wherein the layer (I) and/or (III) are made of a coextrudate of at least two layers, [particularly] comprising a resin gas barrier layer[, particularly an oxygen barrier layer].

Claim 10 (amended). Multi-layer film laminate according to claim 9, [characterised in that] wherein the coextrudate [consists of] comprises two polyamide layers (a) and a gas barrier layer (b)[, particularly of a hydrolysed ethylene vinyl acetate copolymer, which is sandwiched between the polyamide layers (a)].

Claim 11 (amended). Multi-layer film laminate according to [one or more of the claims 1-10, characterised in that] claim 1, wherein the heat-sealable layer (IV) is based on a thermoplastic resin[, particularly a homo- or copolyolefin, particularly LDPE, LLDPE, polypropylene, polybutylene, metallocenic polyethylene, HDPE, ethylene propylene copolymers, ethylene vinyl acetate copolymers or amorphous polyester, particularly an amorphous polyethylene terephthalate or an ionomer].

Claim 12 (amended). Multi-layer film laminate according to [one or more of the claims 1-11, characterised in that] claim 1, wherein the layer(s) (I) and/or the layer(s) (III), respectively, are [vapour] vapor-coated with the same material.

Claim 13 (amended). Multi-layer film laminate according to claim 12, wherein said [characterised in that the] material is aluminium.

Claim 14 (amended). Multi-layer film laminate according to [one of the claims 1-13, characterised in that the] claim 1, wherein each vapor [vapour]-coated layer has a thickness of 30-80nm.

Claim 15 (amended). Vacuum insulation panels with a hermetically sealed wrapping comprising [of] a multi-layer film laminate according to [one of the claims 1-14] claim 1, whereby layer (I) is the outside surface layer of the wrapping.

Claim 16 (amended). Vacuum insulation panels according to claim 15 [characterised in that they consist of] further comprising an insulation material based on polyurethane foam or polystyrene foam each with open cells and/or a filler material based on silicium oxide.

Claim 17 (amended). [Use of the multi-layer film laminate according to one or more of the claims 1-13 as gas impermeable wrapping of a vacuum insulation panel whereby layer (I) is the outside surface layer of the wrapping] A vacuum insulation panel wrapped with a gas impermeable wrapping according to claim 1, wherein layer (1) is the outside surface of the wrapping.